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Jawaharlal Nehru

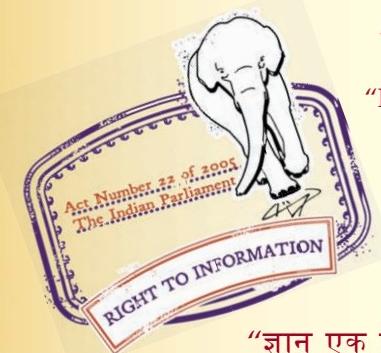
“Step Out From the Old to the New”

IS 11584 (1986): High Density Polyethylene (Hdpe) Crates
for Milk Satchets [PCD 21: Plastics Containers]

“ज्ञान से एक नये भारत का निर्माण”

Satyanaaran Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”



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Indian Standard
SPECIFICATION FOR
HIGH DENSITY POLYETHYLENE (HDPE)
CRATES FOR MILK SATCHELS

UDC 621·798·12 [678·742·2] : 621·798·153 : 637·135



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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

**SPECIFICATION FOR
HIGH DENSITY POLYETHYLENE (HDPE)
CRATES FOR MILK SATCHETS**

Dairy Equipment Sectional Committee, AFDC 35

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Kaira District Co-operative Milk Producers' Union
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(*Continued on page 2*)

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Indian Standard

**SPECIFICATION FOR
HIGH DENSITY POLYETHYLENE (HDPE)
CRATES FOR MILK SATCHETS**

0. F O R E W O R D

0.1 This Indian Standard was adopted by the Indian Standards Institution on 17 February 1986, after the draft finalized by the Dairy Equipment Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Plastic crates are being increasingly used in the dairy industry for transportation of milk in satchets or glass bottles. This standard has been formulated in order to bring uniformity in dimensions and capacities of plastic crates. It is expected that this standard would also help in production of such crates of desired quality and performance.

0.3 Specifications for crates made from mild steel (IS:1613-1960*) and high density polyethylene (IS:9907-1981†) for glass milk bottles have already been published.

0.4 In this standard, only essential dimensions are given. The overall typical shape of the crate described in the standard is for guidance only.

0.5 This standard contains **2.2.2**, **2.3.2**, and **3.2** which call for an agreement between the purchaser and the supplier.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value.

1. SCOPE

1.1 This standard prescribes general dimensions, quality and other requirements for crates made from high density polyethylene (HDPE) for holding and transporting ten 1-litre milk satchets or twenty 500-ml milk satchets.

*Specification for milk bottle crates.

†Specification for high density polyethylene (HDPE) crates for 500-ml glass milk bottles.

‡Rules for rounding off numerical values (*revised*).

2. REQUIREMENTS

2.1 The crates shall consist of a rectangular HDPE container with base, side walls and a central partition.

2.2 Material — The crate shall be made from the unpigmented high density polyethylene, designation HDPE 54 M.A. with density above 0·952 4 conforming to IS:7328-1974*.

2.2.1 The crates shall be manufactured by the injection moulding process with multi-feeding hot runner system so that the flow of material is easy and uniform during moulding.

2.2.2 The colour of the crate shall be as agreed to between the purchaser and the supplier and when the carbon black is not used, adequate ultra-violet stabilizer shall be added and mixed homogeneously in the mass.

2.3 Shape and Dimensions

2.3.1 A typical shape of the crate is given in Fig. 1. The dimensions of the crate shall be as given in Fig. 1.

2.3.2 The crate shall have one central partition as shown in Fig. 1. As agreed to between the purchaser and the supplier, two square holes of 10×10 mm shall be provided at the bottom of the partition and located at the opposite ends (*see* Fig. 1).

2.3.3 The crates shall be interchangeable, interstackable and shall be stable at 8 stack high when loaded to capacity with filled satchets.

2.4 Mass — The minimum mass of the finished crate shall be not less than 1 500 g.

2.5 Appearance and Surface Finish

2.5.1 The inside and outside surface of the crate shall be of a smooth finish and free from sharp edges and shall be so shaped that water as far as possible, is freely shed.

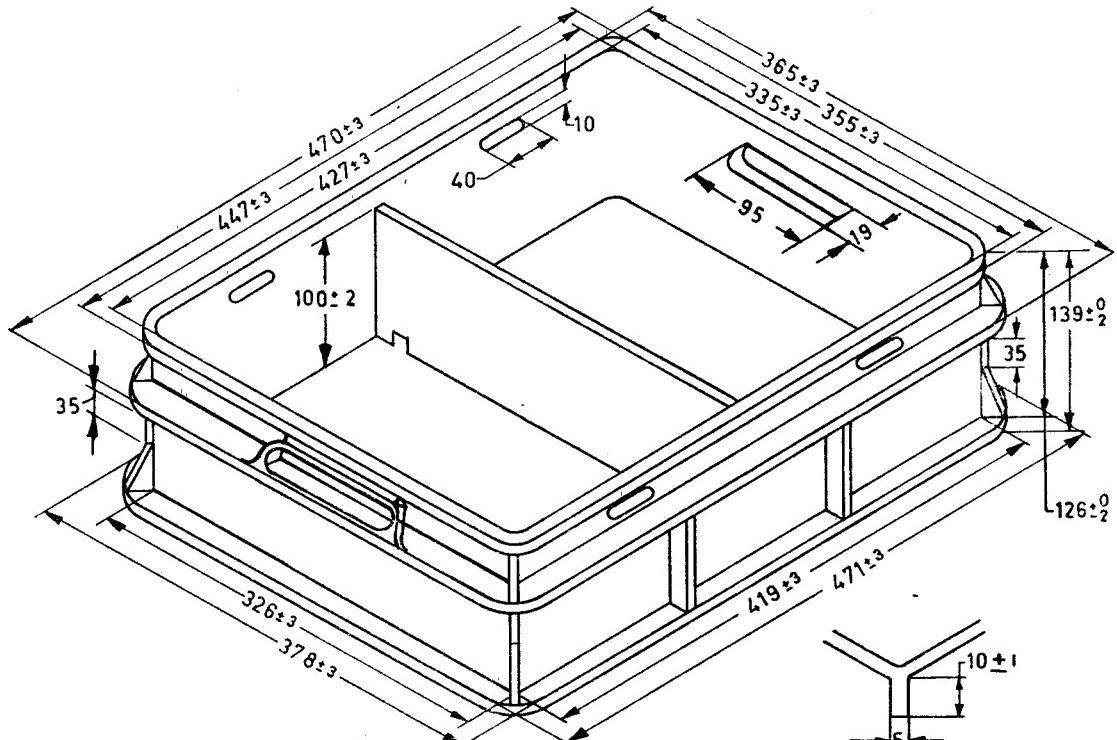
2.6 Colour Fastness

2.6.1 The colour fastness of the pigmented material to day-light when determined by the spectrophotometer shall be as agreed to between the purchaser and the supplier.

2.7 Resistance to Stress

2.7.1 A crate, when tested in accordance with the method described in Appendix A, shall show no surface cracking.

*Specification for high density polyethylene materials for moulding and extrusion.



DETAIL OF BOTTOM SPIGOT
STACKING PORTION

All dimensions in millimetres.

FIG. 1 HDPE CRATE FOR MILK SATCHEL

2.8 Resistance to Applied Load

2.8.1 The compression in the height of a crate when tested in accordance with the method described in Appendix B shall not exceed one percent of its original height. Twenty four hours after removal of the test load the compression shall have recovered by at least 50 percent.

2.9 Strength

2.9.1 *Resistance to Drop* — When a fully filled crate is tested in accordance with the method described in Appendix C, no crack of the crate shall occur.

2.9.2 *Resistance to Low Temperature Drop* — When a fully filled crate is tested in accordance with the method described in C-2, no damage other than superficial abrasion shall occur.

2.10 Dimensional Stability

2.10.1 After testing in accordance with the method described in Appendix D, the crate shall comply with the requirements in 2.3.1 subject to variation of ± 1.5 percent of the original dimension; however, inter-stackability shall not be affected.

3. MARKING

3.1 Each crate shall be marked legibly and permanently with the following particulars:

- a) Manufacturer's name or initials or trade-mark, if any;
- b) Month and year of manufacture;
- c) Batch or code number; and
- d) Any other markings as desired by the purchaser.

3.1.1 Each crate may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

3.2 Packing — The crates shall be packed as agreed to between the purchaser and the supplier.

4. SAMPLING

4.1 Representative samples of crates for testing conformity to this standard shall be drawn as described in Appendix E of IS:9907-1981*.

A P P E N D I X A

(*Clause 2.7*)

DETERMINATION OF RESISTANCE TO STRESS

A-1. PROCEDURE

A-1.1 Submerge a crate in one percent solution of suitable surface active agent at $80 \pm 1^{\circ}\text{C}$ for 6 hours and then examine for surface cracking.

A P P E N D I X B

(*Clause 2.8*)

DETERMINATION OF RESISTANCE TO APPLIED LOAD

B-1. PROCEDURE

B-1.1 Fill 8 crates with 10 filled 1-litre satchet or with dummies of the same dimensions and mass. Measure the height of one crate at $27 \pm 1^{\circ}\text{C}$. Stack five other identical crates each similarly filled on top of the measured crate at $27 \pm 1^{\circ}\text{C}$ for 100 hours and then measure the reduction in height of the bottom crate. Remove the top seven crates and after 24 hours, again measure the height of the crate under test.

*Specification for high density polyethylene (HDPE) crates for 500-ml glass milk bottles.

A P P E N D I X C

(*Clause 2.9*)

DETERMINATION OF RESISTANCE TO DROP

C-1. PROCEDURE

C-1.1 Load a crate with dummies of the same dimension, mass, rigidly and centre of gravity as filled satchets. Drop the loaded crate at a temperature of $27 \pm 1^\circ\text{C}$ from horizontal position from a height of 0.7 metre on to a steel plate inclined at 10° . Drop the crate three times on one corner and then three times each on the adjacent long side and the adjacent shorts side.

C-2. LOW TEMPERATURE DROP

C-2.1 Load a crate with dummies (see **C-1.1**). Maintain the loaded crate at a temperature of $5 \pm 1^\circ\text{C}$ for a period of 6 hours. Drop the above crate at $5 \pm 1^\circ\text{C}$ in a horizontal position on to concrete surface or floor from a height of not less than 3 metres.

A P P E N D I X D

(*Clause 2.10.1*)

TEST FOR DIMENSIONAL STABILITY

D-1. PROCEDURE

D-1.1 Note down the dimensions of the crate. Support the empty crate on its base in an air circulation oven at $80 \pm 3^\circ\text{C}$ for 30 minutes. Whilst it is still supported on its base, allow it to cool to ambient temperature. Calculate the percentage change in the dimensions of the crate.

AMENDMENT NO. 1 SEPTEMBER 1987

TO

IS:11584-1986 SPECIFICATION FOR HIGH DENSITY
POLYETHYLENE (HDPE) CRATES FOR MILK SATCHETS

(Page 4, clause 2.6) - Delete.

(Page 5, Fig. 1) - Substitute '124+2' for
'126+⁰₂'.

(AFDC 35)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 MAY 1992
TO
IS 11584 : 1986 SPECIFICATION FOR HIGH DENSITY
POLYETHYLENE (HDPE) CRATES FOR MILK
SATCHETS

(Page 4, clause 2.3.1) — Substitute the following for the existing clause:

'2.3.1 A typical shape of the crate and its dimensions are given in Fig. 1. Any other shape of dimensions may be acceptable as agreed to between the purchaser and the supplier.'

(Page 7, clause B-1.1, line 3) — Substitute 'seven' for 'five'.

(PCD 21)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 3 JUNE 1997
TO
IS 11584 : 1986 SPECIFICATION FOR HIGH DENSITY
POLYETHYLENE (HDPE) CRATES FOR MILK
SATCHETS

(*Page 4, clause 2.2*) — Substitute the following for the existing clause:

'2.2 Material — The crate shall be made from the unpigmented high density polyethylene designation PE MAN A50 D 045 or PE MAN A50 D 090 or PE MAN A57 D 045 or PE MAN A57 D 090 or PE MWC A50 D 090 or PE MWC A57 D 090 conforming to IS 7328 : 1992*.'

(*Page 4, footnote marked '*'*) — Insert '(*first revision*)' at the end of the title.

(PCD 21)

Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 4 JUNE 2003
TO
IS 11584 : 1986 SPECIFICATION FOR HIGH DENSITY
POLYETHYLENE (HDPE) CRATES FOR MILK SATCHETS**

(*Page 3, Foreword, clause 0.5*) — Insert the following new clause after 0.5 and renumber the subsequent clause:

‘0.6 A scheme of labelling environment friendly products with the ECO logo has been introduced at the instance of the Ministry of Environment and Forests (MEF), Government of India. The ECO-Mark is being administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolutions No. 71 dated 21 February 1991 and No. 425 dated 28 October 1992 published in the Gazette of the Government of India. For a product to be eligible for marking with the ECO logo, it shall also carry the ISI Mark of the BIS besides meeting additional environment friendly requirements. For this purpose the Standard Mark would be a single mark being a combination of the ISI Mark and the ECO logo.

This amendment is based on the gazette Notification No. 170 dated 18 May 1996 for plastic products as environment friendly products published in the Gazette of the Government of India. This amendment is, therefore, being issued to this standard to include environment friendly requirements for high density polyethylene (HDPE) crates for milk satchets.’

(*Page 6, clause 2.10.1*) — Insert the following new clauses after 2.10.1 and renumber the subsequent clauses:

‘3 ADDITIONAL REQUIREMENTS FOR ECO-MARK

3.1 General Requirements

3.1.1 The product shall conform to the requirements for quality, safety and performance prescribed.

3.1.2 The manufacturer shall produce to BIS the consent clearance as per the provisions of *Water (Prevention & Control of Pollution) Act*, 1974 and *Air (Prevention & Control of Pollution) Act*, 1981 along with the authorization, if required under *Environment (Protection) Act*, 1986 and the Rules made thereunder while applying for the ECO-Mark. The manufacturers of plastic wares shall produce documentary evidence with respect to the compliance of regulation under *Drugs and Cosmetic Act*, 1940 and the Rules made thereunder, wherever necessary.

3.1.3 The product must display a list of critical ingredients in descending order of quantity present expressed as percent of the total. The list of such ingredients shall be identified by Bureau of Indian Standards.

3.1.4 The product packaging shall display in brief the criteria based on which the product has been labelled as 'Environment Friendly'.

3.1.5 The material used for product packaging shall be recyclable or biodegradable.

3.1.6 It shall also suitably mention that ECO-Mark label is applicable only to the packaging material/package, if content is not separately covered under ECO-Mark. It may be stated that ECO-Mark is applicable to the product or packaging material or both.

3.2 Product Specific Requirements

The plastic products shall apart from fillers and reinforcing agents, be made from the minimum of 90 percent, by weight of compatible plastic wastes.

NOTE — The manufacturer shall provide documentary evidence by way of certificate or declaration to this effect.'

(PCD 21)